EXPRESS MAIL LABEL: EL580060724US 07-18-00 PATENT APPLICATION CONTINUATION-IN-PART
Docket No. T8098.CIP

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BOX PATENT APPLICATION
Assistant Commissioner for Patents
Washington, DC 20231

Sir/Madam:

Transmitted herewith for filing is the patent application of **Dan Haynie** for **"DEVICE FOR ENHANCING REMOVAL OF LIQUID FROM FABRIC"** comprising 25 pages of specification and claims, and an Inventor Oath/Declaration and Petition with signature.

X Priority to Application No. 09/356,782 filed July 19, 1999 in the United States Patent Office is hereby claimed.

Enclosed also are:

X 5 sheet(s) of drawings (informal)

X An Assignee Power of Attorney

X A Verified Statement to Establish Small Entity Status Under 37 C.F.R. § 1.9 and 37 C.F.R. § 1.27

X An Assignment

X A Certificate of Mailing by "Express Mail" certifying a filing date of July 17, 2000, by use of U.S. Express Mail Label No. EL580060724US.

CERTIFICATE OF DEPOSIT

EXPRESS MAIL LABEL NO.: EL580060724US DATE OF DEPOSIT: July 17, 2000

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. § 1.10 on the date indicated above and is address to: Box Patent Applications, Assistant Commissioner for Patents, Washington, D.C. 20231.

Barbara Allen

Barbara Allen

___ Information Disclosure Statement under 37 C.F.R. § 1.97, PTO Form-1449 with listed references attached (if indicated as being attached by the Information Disclosure Statement).

The filing fee has been calculated as shown below.

			SMALL ENTITY		OTHER THAN A SMALL ENTITY	
FOR	**NO. FILED**	**NO. EXTRA**	**RATE**	**FEE**	**RATE**	**FEE**
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X A check in the amount of $394.00 is enclosed to cover the filing fee.

X The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 20-0100;

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X Any filing fees under 37 C.F.R. § 1.16 for presentation of extra claims.

Please address all future correspondence in connection with the above-identified patent application to the attention of the undersigned.

Dated this 17th day of July, 2000.

Respectfully submitted,

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STATEMENT CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) & 1.27(c)) -- SMALL BUSINESS CONCERN	Docket Number (Optional) T8098.CIP

Applicant, Patentee, or Identifier: Haynie

Application or Patent No.: _____

Filed or Issued: July 17, 2000

Title: DEVICE FOR ENHANCING REMOVAL OF LIQUID FROM FABRIC

I hereby state that I am

□ the owner of the small business concern identified below:

☒ An official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF SMALL BUSINESS CONCERN CONCEPT CLEANING SYSTEMS, INC.

ADDRESS OF SMALL BUSINESS CONCERN 1530 North 1000 West, Logan, Utah 84321

I hereby state that the above identified small business concern qualifies as a small business concern as defined in 13 CFR Part 121 for purposes of paying reduced fees to the United States Patent and Trademark Office. Questions related to size standards for a small business concern may be directed to: Small Business Administration, Size Standards Staff, 409 Third Street, SW, Washington, DC 20415.

I hereby state that rights under contract law have been conveyed to and remain with the small business concern identified above with regard to the invention described in:

☒ the specification filed herewith with title as listed above.

□ the application identified above.

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If the rights held by the above identified small business concern are not exclusive, each individual, concern, or organization having rights in the invention must file separate statements as to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern, or organization having any rights in the invention is listed below:

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Separate statements are required from each named person, concern or organization having rights to the invention stating their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

NAME OF PERSON SIGNING Craig Donaldson

TITLE OF PERSON IF OTHER THAN OWNER President

ADDRESS OF PERSON SIGNING 1530 North 1000 West, Logan, Utah 84321

SIGNATURE _____ DATE 7/14/00

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EXPRESS MAIL LABEL NO. EL580060724US

PATENT APPLICATION
DOCKET NO. T8098.CIP

United States Patent Application

of

Dan Haynie

for

DEVICE FOR ENHANCING REMOVAL OF LIQUID FROM FABRIC

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

Your petitioner, **Dan Haynie**, citizen of the United States, whose residence and postal mailing address is 1058 East 2100 North, North Logan, Utah 84341, prays that letters patent may be granted to him as the inventor of a **DEVICE FOR ENHANCING REMOVAL OF LIQUID FROM FABRIC** as set forth in the following specification.

This application is a continuation-in-part of co-pending U.S. Application Serial No. 09/356,782, filed July 19, 1999.

BACKGROUND OF THE INVENTION

1. The Field of the Invention.

The present invention relates generally to a device for increasing the efficiency of a carpet cleaning machine and other extraction machines in removing cleaning solution and other liquids from fabric, such as carpet. More particularly, the present invention relates to an improved vacuum head for penetrating carpet.

2. The Background Art.

Carpet-cleaning machines spray a cleaning solution onto a fabric or carpet and then vacuum the solution from the carpet into the machine. Other extraction machines may spray a liquid onto a fabric or simply remove a pre-existing liquid from the fabric.

Carpet cleaning machines typically include a wand with a cleaning head that is movable over the carpet, or a rotating platform that rotates one or more cleaning heads over the carpet. The cleaning heads usually include a spray nozzle for spraying a liquid, such as a cleaning solution, onto and/or into the carpet. In addition, the cleaning heads usually include a vacuum head for

vacuuming or sucking the fluid, and any dirt, from the carpet. The vacuum heads commonly include large opening, such as with an inverted funnel, which sit and move atop the carpet.

One disadvantage with many vacuum heads is their inefficiency. Some vacuum heads remove less than 20% of the fluid. It will be appreciated that the fluid remaining in the carpet renders the carpet wet, and thus off limits for many hours while the carpet dries. In addition, it will be appreciated that a significant amount of dirt remains in the carpet with the remaining fluid.

SUMMARY OF THE INVENTION

It has been recognized that it would be advantageous to develop a device for increasing the efficiency of carpet cleaning machines, and other extraction machines. In addition, it has been recognized that it would be advantageous to develop an improved vacuum head for removing a greater amount of fluid from carpet.

The invention provides a vacuum head device for attachment to the bottom of a wand or other nozzle that is used to vacuum liquid, especially liquid cleaning solution, from fabric, such as a carpet. The device includes an elongated base plate to be moved on the carpeted surface. The base plate can have a tapering cross section with a wider upper end and a narrower lower end to penetrate into the carpeted surface. In addition, the base plate includes a plurality of apertures formed in an array in the base plate to withdraw the fluid under a vacuum force.

In accordance with one aspect of the present invention, the plurality of apertures can be sized larger than a width of a lower surface of the base plate to create a plurality of protrusions. The protrusions extend from the base plate to penetrate the carpeted surface.

In accordance with another aspect of the present invention, a plurality of channels can be formed in the lower end of the base plate, and each extend from the forward surface to one of the

plurality of apertures. The channels can channel the fluid to the apertures.

In accordance with another aspect of the present invention, the device may further employ two mechanical concepts and two aerodynamic techniques to enhance the extraction of the liquid from the fabric.

Additional features and advantages of the invention will be set forth in the detailed description which follows, taken in conjunction with the accompanying drawing, which together illustrate by way of example, the features of the invention.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a bottom view of a base plate of the vacuum head in accordance with the present invention.

FIG. 2 is an end view of the base plate of the vacuum head of FIG. 1.

FIG. 3 is a front view of the vase plate of the vacuum head of FIG. 1.

FIG. 4 is an end view of another base plate of a vacuum head in accordance with the present invention.

FIG. 5 is an end view of another base plate of a vacuum head in accordance with the present invention.

FIG. 6 is a perspective view of a base plate of a vacuum head in accordance with the present invention.

FIG. 7 is a front view of the base plate of the vacuum head of FIG. 6.

FIG. 8 is a bottom view of the base plate of the vacuum head of FIG. 6.

FIG. 9 is a partial bottom view of the base plate of the vacuum head of FIG. 6.

FIG. 10 is a cross-sectional end view of the base plate of the vacuum head of FIG. 6.

FIG 11 is an exemplary graph showing the relationship between airwatts, mass airflow, and pressure.

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DETAILED DESCRIPTION

For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the exemplary embodiments illustrated in the drawings, and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended. Any alterations and further modifications of the inventive features illustrated herein, and any additional applications of the principles of the invention as illustrated herein, which would occur to one skilled in the relevant art and having possession of this disclosure, are to be considered within the scope of the invention.

As illustrated in FIGs. 1-3 and 6-10, a vacuum head device, indicated generally at 10, in accordance with the present invention is shown for removing liquid from fabric, such as carpet. Carpet cleaning and carpet cleaning machines are examples of fields which may benefit from use of such a device. The vacuum head device 10 can be used to withdraw a fluid from a carpeted surface 14. Such a device 10 can be constructed initially in a carpet cleaning machine or other machine, or it can be attached to existing such machines.

The device 10 includes a base plate 18 with one or more apertures 22 which serve as extraction nozzles to remove liquid

from a fabric or carpet 14 when the device 10 has been built into or retrofitted on a vacuum machine, such as a carpet-cleaning machine. The base plate 18 preferably is elongated and movable on or through the carpeted surface 14. The one or more apertures 22 are formed in the base plate 18 and withdraw fluid under a vacuum force supplied by the machine, as is well known in the art.

The base plate 18 advantageously can have a tapering cross section with a wider upper end 26 and a narrower lower end 30. The cross section of the base plate 18 can be V-shaped, with an angled forward surface 32. The narrow lower end 30 advantageously is better able to penetrate into the carpeted surface 14, and thus locate the apertures 22 closer to the bottom of the carpeted surface 14, and the fluid. The lower end 30 can be rounded to facilitate movement through the carpet.

In addition, the one or more apertures 22 advantageously includes a plurality of apertures formed in an array along the length of the base plate 18. The array of apertures 222 can be linearly aligned, as shown. The plurality of apertures 22 preferably are formed at the lower end 30 of the base plate 18, such that the apertures 22 can be located closer to the fluid at the bottom of the carpeted surface 14.

The base plate 18 has a lower surface 34 at the lower end 30 with a width. The apertures 22 preferably have a diameter or size

larger than the width of the lower surface 34, thus creating a plurality of protrusions or barriers 38 between the apertures 22 extending from the base plate 18 to penetrate the carpeted surface 14. The protrusions or barriers 38 advantageously force any liquid in the carpeted surface 14 toward the apertures 22 as the base plate 18 is moved across the carpeted surface 14. In addition, the narrower end 30 and protrusions or barriers 38 advantageously penetrate into the carpeted surface 14 to reach the fluid.

The protrusions or barriers 38 may have a total surface area located between the apertures 22 which is less than a total area of the apertures 22. In addition, each of the protrusions 38 may have a width between the apertures 22 which is less than a width or diameter of the apertures 22.

In addition, the base plate 18 can include one or more channels 42 formed in the lower end 30. The channels 42 extend from the forward surface 32 to corresponding apertures 22. The channels 42 allow fluid to flow into the apertures 22.

The protrusions or barriers 38 can be attached to the bottom or lower end 30 of the base plate 18, which is the portion of the base plate 18 that will face and contact the carpet, and are preferably an integral part of the base plate 18. These barriers 38 can be oriented and shaped in any fashion that will force any liquid in the fabric toward the apertures 22 as the base plate 18

is moved across the fabric. For a machine that will generally be moved straight forward and straight reverse across a carpet, the barriers 38, as viewed from below, preferably have a straight, elongated shape, as illustrated in FIG. 1.

The barriers 38 are preferably generally located between apertures 22, preferably between adjacent apertures 22, as depicted in FIG. 1.

The liquid tends to go laterally rather than further into the fabric for two reasons: first, the fabric is denser under the barriers 38 because the barriers 38 are, in use, pressed against the fabric and, second, a vacuum is applied through the apertures 22.

The construction of the barriers 38 is such that each barrier 38 has only a small surface area that will contact the fabric generally perpendicularly to the original orientation of such fabric. A preferred shape for a barrier 38, as viewed from either end of the barrier 38, to be used with a machine that will generally be moved straight forward and straight reverse across a fabric is a V-shape which is preferably integrally formed with the base plate 18, which is also preferably V-shaped when viewed from either end, as shown in FIG. 2. The view of this preferred shape for the barrier 38 and the base plate 14 from either in front of the base plate 14 or behind the base plate 14 is given in FIG. 3.

Optionally, barriers 50 can be located behind the apertures 22, as portrayed in FIG. 4. In such a case, a single barrier 50 preferably runs behind all the apertures 22. Having a barrier 50 located behind the apertures 22, with respect to the intended direction of movement for a base plate 52, tends further to increase the probability that liquid will be drawn into the apertures 22 because an aperture 22 will not simply pass over the liquid; by the barrier 50 forcing the liquid to move with the aperture 22 as part of the process of forcing the liquid toward such aperture 22 the liquid will be retained for a longer period of time under the aperture 22 to which a vacuum is being applied.

A further optional embodiment, which is illustrated in FIG. 5, has barriers 60 and 62 both generally between the apertures 22 and also behind the apertures 22.

As indicated above, the device 10 may employ two mechanical concepts and two aerodynamic techniques to enhance extraction of the liquid from the carpet. First, concerning the mechanical concepts, the apertures or barriers are attached to the portion of the device that will contact the fabric so that such barriers, when force is applied to the device, will extend farther into the fabric than any other portion of the device. These barriers can be oriented and shaped in any fashion that will push any liquid in the fabric toward extraction nozzles as the device is moved across the

fabric, in a manner similar to the way that a snow plow pushes snow ahead and to the side of the plow.

Second, concerning the mechanical concepts, since pressure is equal to force divided by the component of surface area that applies such force and that is perpendicular to the body to which force is applied, the pressure exerted by the device upon fabric is increased by decreasing the surface area of the device that contacts the fabric.

The extraction nozzles are apertures in the only portion of the device, other than the barriers, that will, when the device is used, face and contact the fabric and are generally located between the barriers. The existence of such apertures, therefore, decreases the surface area of the device that will contact the fabric.

The fact that, when force is applied to the device, the barriers extend farther into the fabric than any other portion of the device is also employed to further increase the pressure that the device exerts, for a given force, against the fabric since such barriers are constructed to have only a small surface area which contacts the fabric generally perpendicularly to the original orientation of such fabric.

Thus, the existence of the apertures and the construction of the barriers combine to increase the pressure that is exerted

against a fabric when a given force is applied to the device and, therefore, to increase the penetration of the device into the fabric. Such increased penetration enhances the removal of any liquid in the fabric.

Referring to FIG. 11, with respect to the first aerodynamic technique, the usable energy or power of an extraction airstream produced by a vacuum motor is a function of the mass airflow (CFM) versus velocity (pressure) and is expressed in SI units as airwatts. Per ASTM F558-95, the equation for this unit derives to:

Airpower (airwatts) = .11735 (diff pressure in H_2O)(flowrate in CFM)

In centrifugal blowers, airstream energy, and thus airwatts, typically peak where the CFM versus H_2O curves intersect. As a result, running a blower close to this intersecting pressure range should result in the crested amount of useful energy in which to perform work such as moisture extraction. The system needs to be "tuned" (hose length/size, nozzle opening, etc.) to ensure this is the case.

The second aerodynamic technique is reducing, and preferably minimizing, the boundary layer drag in the extraction nozzles. This is accomplished by reducing, and preferably minimizing, the ratio of the total distance measured along the perimeters of the extraction nozzles to the total cross-sectional area of the

extraction nozzles, which, consequentially, minimizes the surface of the extraction nozzles to which the stream of air is exposed.

For extraction nozzles having a circular or rectangular cross section, once the total cross-sectional area for the nozzles has been determined as discussed above, mathematically applying this second aerodynamic technique demonstrates that the greater the number of extraction nozzles for a given total cross-sectional area, the larger will be the requisite ratio and the boundary layer drag.

Finally, the cross-sectional area of each of the extraction nozzles is selected to be large enough to permit solid contaminants that can be expected to be in the liquid to pass through the extraction nozzles without clogging such nozzles. Since such contaminants are generally larger than the diameter of carpet fibers, application of this final concept also reduces the likelihood that carpet fibers will obstruct a nozzle.

Although the last two paragraphs considered alone would suggest that a single extraction nozzle would be preferable, experimental observations have demonstrated that better performance is achieved with multiple barriers and multiple apertures, provided the total cross-sectional area of the extraction nozzles has been selected to increase, and preferably maximize, the extraction power for the vacuum motor.

Thus, as a practical matter, the shape and number of extraction nozzles is determined empirically.

As discussed above, the existence of the apertures 22, and the fact that, when force is applied to the device 10, the barriers 38 extend farther into the fabric than any other portion of the device 10; and the construction of such barriers 38 to have only a small surface area which contacts the fabric generally perpendicularly to the original orientation of such fabric combine to decrease the surface areas of the device that will exert pressure on the fabric, *i.e.*, the barriers 38 and the base plate 18, and thereby to increase the pressure and, consequently, the penetration of the barriers 38 and the base plate 18 achieved when a given force is applied to the device. Such increased penetration of the base plate 18 enhances the removal of any liquid in the fabric.

The total cross-sectional area of the apertures 22 is selected to be that which, as explained above, increases, and preferably maximizes, the energy content of air that moves through such apertures 22; this is accomplished by selecting the total of the aperture size for all apertures 22 combined to create the rate of air flow through the apertures 22 that will increase, and preferably maximize, the extraction power for the vacuum with which the device is to be utilized.

Additionally, the number and shape of the apertures 22 is selected to reduce boundary layer drag by reducing, and preferably minimizing, the ratio of the total distance measured along the perimeters of the apertures 22 to the total cross-sectional area of such apertures 22. This, as also explained above, minimizes the surface of the apertures 22 to which the stream of air is exposed.

Finally again as discussed above, the cross-sectional area of the apertures 22 is selected to be large enough to permit solid contaminants that can be expected to be in the liquid to pass through the apertures 22 without clogging these apertures 22. This is consistent with the other aerodynamic goals because, *e.g.*, the ratio of the total distance measured along the perimeters of the apertures 22 to the total cross-sectional area of such apertures 22, when the apertures 22 are circles, is inversely proportional to the radius of such circles.

A commercially available system for placing a cleaning fluid on carpet and vacuuming the fluid from the carpet having a single rectangular aperture and no barriers was modified by inserting several embodiments of the vacuum head device having ten apertures 22 and between two and ten barriers of different lengths. The original system recovered 17.81 percent of the cleaning fluid that had been placed upon the carpet. The average recovery for the

system modified to incorporate the three versions of the vacuum head device, one version at a time, of course, was 47.33 percent.

On the upper surface of the base plate 18 is located a projection 70 that surrounds the apertures 22. Only this projection 70 is inserted into the wand or other nozzle of the vacuum system. A gasket that is well known in the art is placed around the projection 70 to form a seal when the device is attached to the wand or other nozzle. The projection 70 prevents the gasket from inadvertently obstructing any aperture 22.

On the bottom 30 of the base plate 18, the apertures 22 can be countersunk to minimize the risk of snagging carpet fabric fibers and to assist in blending the stream of air that flows into each aperture 22.

It is to be understood that the above-described arrangements are only illustrative of the application of the principles of the present invention. Numerous modifications and alternative arrangements may be devised by those skilled in the art without departing from the spirit and scope of the present invention and the appended claims are intended to cover such modifications and arrangements. Thus, while the present invention has been shown in the drawings and fully described above with particularity and detail in connection with what is presently deemed to be the most

practical and preferred embodiment(s) of the invention, it will be apparent to those of ordinary skill in the art that numerous modifications, including, but not limited to, variations in size, materials, shape, form, function and manner of operation, assembly and use may be made, without departing from the principles and concepts of the invention as set forth in the claims.

CLAIMS

What is claimed is:

1. A vacuum head device configured to withdraw a fluid from a carpeted surface, the device comprising:

a) an elongated base plate configured to be movably disposed on the carpeted surface, and having a tapering cross section with a wider upper end and a narrower lower end configured to penetrate into the carpeted surface; and

b) at least one aperture, formed in the base plate, configured to withdraw the fluid under a vacuum force.

2. A device in accordance with claim 1, wherein the at least one aperture includes a plurality of apertures formed in an array in the base plate.

3. A device in accordance with claim 2, wherein the base plate has a lower surface; and wherein the plurality of apertures are formed at the lower end, and sized larger than a width of the lower surface, creating a plurality of protrusions extending from the base plate configured to penetrate the carpeted surface.

4. A device in accordance with claim 3, wherein the protrusions have a total surface area between the apertures less than a total area of the apertures.

5. A device in accordance with claim 3, wherein each of the protrusions have a width between the apertures less than a width of the apertures.

6. A device in accordance with claim 1, wherein the cross section of the base plate is V-shaped, and the lower end is rounded.

7. A device in accordance with claim 1, wherein the base plate includes a forward surface; and further comprising:

at least one channel, formed in the lower end of the base plate and extending from the forward surface to the at least one aperture.

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8. A vacuum head device configured to withdraw a fluid from a carpeted surface, the device comprising:

a) an elongated base plate configured to be movably disposed on the carpeted surface; and

b) a plurality of apertures, formed in an array in the base plate, configured to withdraw the fluid under a vacuum force.

9. A device in accordance with claim 8, wherein the base plate has a tapering cross section with a wider upper end and a narrower lower end configured to penetrate into the carpeted surface.

10. A device in accordance with claim 9, wherein the cross section of the base plate is V-shaped, and the lower end is rounded.

11. A device in accordance with claim 9, wherein the base plate has a lower surface; and wherein the plurality of apertures are formed at the lower end, and sized larger than a width of the lower surface, creating a plurality of protrusions extending from the base plate configured to penetrate the carpeted surface.

12. A device in accordance with claim 11, wherein the protrusions have a total surface area between the apertures less than a total area of the apertures.

13. A device in accordance with claim 11, wherein each of the protrusions have a width between the apertures less than a width of the apertures.

14. A device in accordance with claim 8, wherein the base plate includes a forward surface; and further comprising:

a plurality of channels, formed in the lower end of the base plate and each extending from the forward surface to one of the plurality of apertures.

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15. A vacuum head device configured to withdraw a fluid from a carpeted surface, the device comprising:

a) an elongated base plate configured to be movably disposed on the carpeted surface, and having a tapering cross section with a wider upper end and a narrower lower end configured to penetrate into the carpeted surface; and

b) a plurality of apertures, formed in an array in the base plate, configured to withdraw the fluid under a vacuum force.

16. A device in accordance with claim 15, wherein the plurality of apertures are formed at the lower end.

17. A device in accordance with claim 15, wherein the base plate has a lower surface; and wherein the plurality of apertures are formed at the lower end, and sized larger than a width of the lower surface, creating a plurality of protrusions extending from the base plate configured to penetrate the carpeted surface.

18. A device in accordance with claim 17, wherein the protrusions have a total surface area between the apertures less than a total area of the apertures.

19. A device in accordance with claim 17, wherein each of the protrusions have a width between the apertures less than a width of the apertures.

20. A device in accordance with claim 15, wherein the cross section of the base plate is V-shaped, and the lower end is rounded.

21. A device in accordance with claim 15, wherein the base plate includes a forward surface; and further comprising:

a plurality of channels, formed in the lower end of the base plate and each extending from the forward surface to one of the plurality of apertures.

ABSTRACT OF THE DISCLOSURE

A device for enhancing removal of liquid from fabric, such as a vacuum head device for removing liquid from carpet, includes an elongated base plate to be moved across the carpet. The vacuum head has a tapering cross section with a wider upper end and a narrower lower end configured to penetrate into the carpeted surface. In addition, a plurality of apertures are formed in an array in the base plate to withdraw the fluid under a vacuum force. Preferably, the plurality of apertures are sized larger than a width of the lower surface to create a plurality of protrusions extending from the base plate configured to penetrate the carpeted surface.

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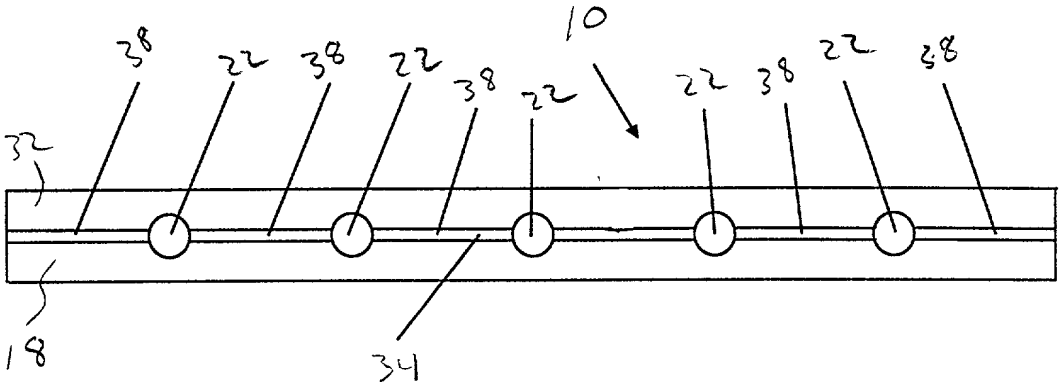


Figure 1

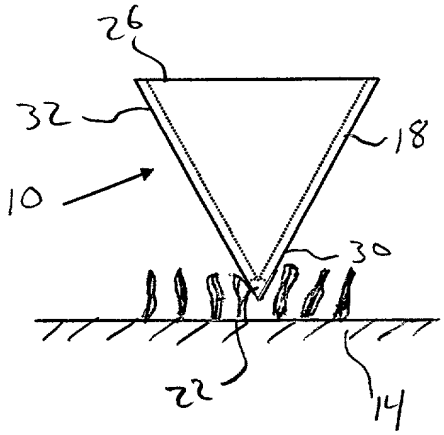


Figure 2

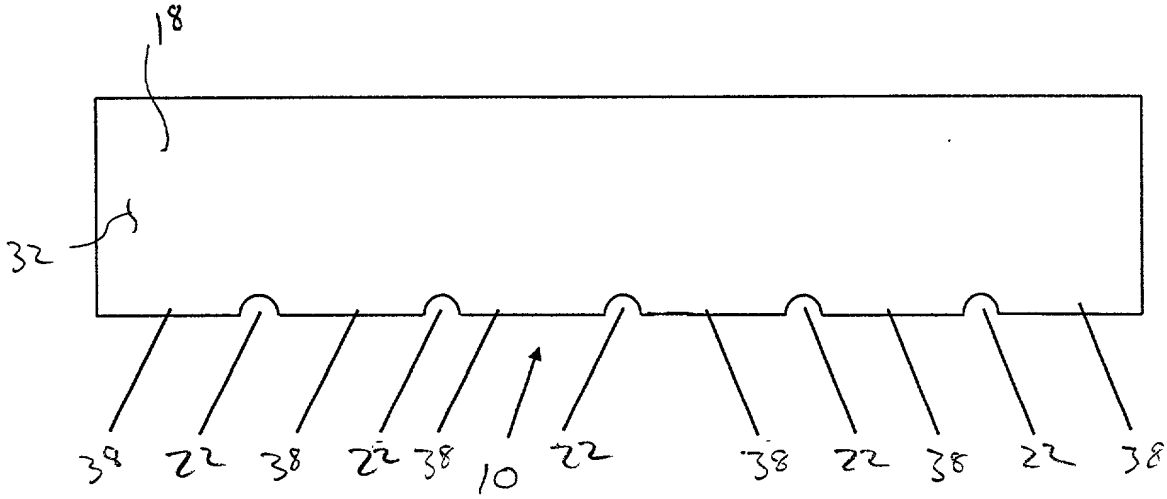


Figure 3

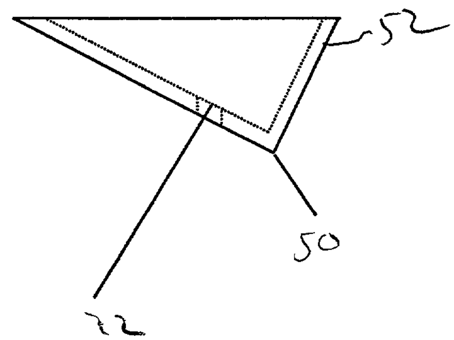


Figure 4

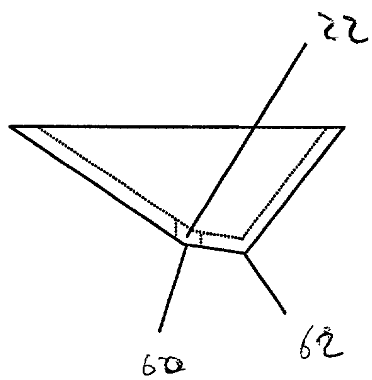


Figure 5

Fig. 6

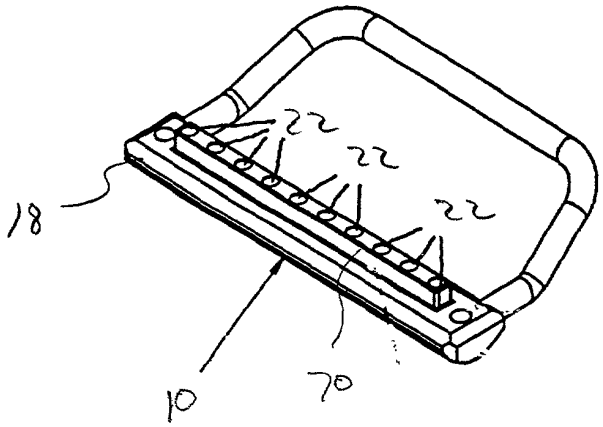


Fig. 7

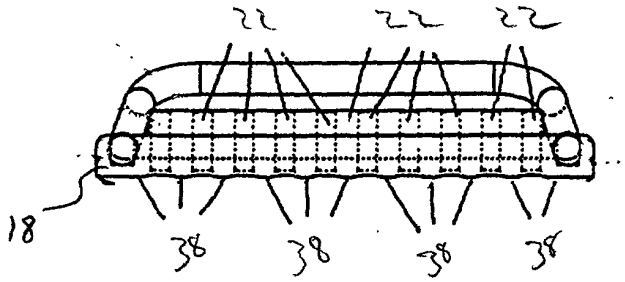


Fig. 8

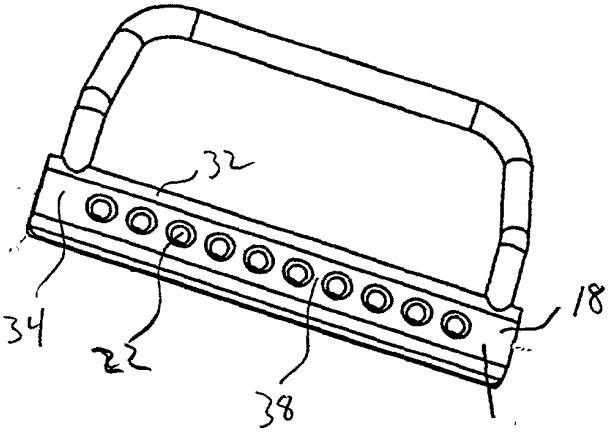


Fig. 9

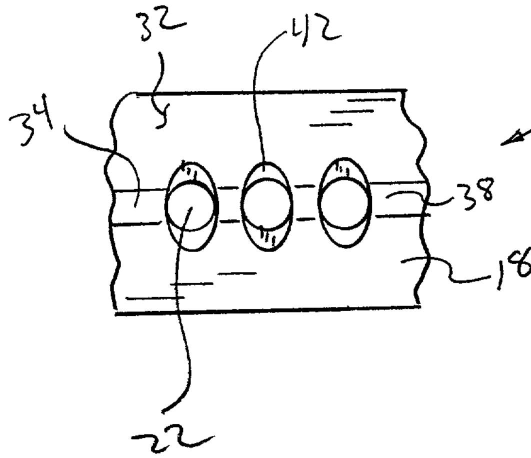


Fig. 10

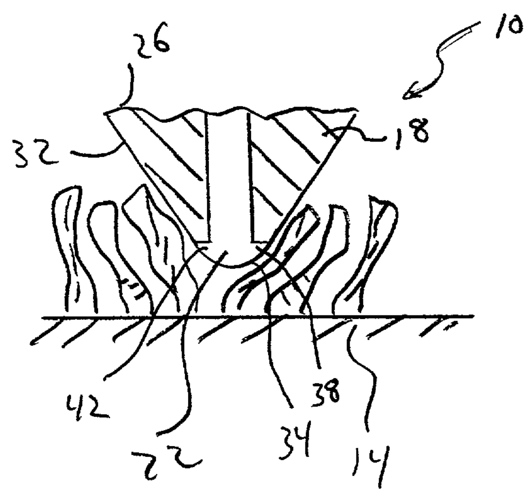
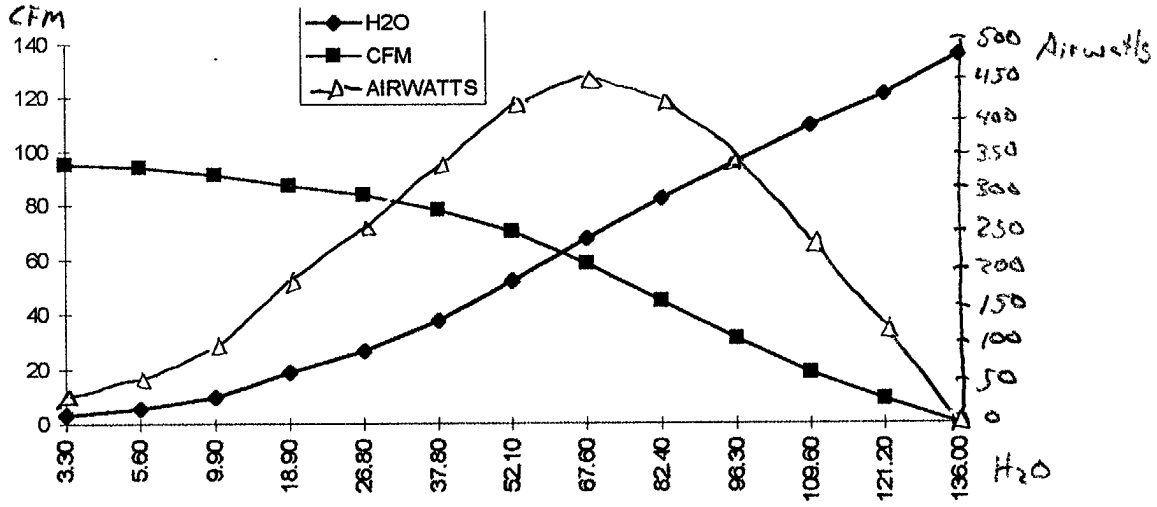


Fig. 11

H2O	CFM	AIRWATTS
3.3	95.3	36.91
5.6	94.1	61.84
9.9	91.4	106.19
18.9	87.4	193.85
26.8	83.9	263.86
37.8	78.3	347.38
52.1	70.2	429.20
67.6	58.5	464.07
82.4	44.7	432.73
96.3	30.8	348.06
109.6	18.5	287.94
121.2	8.9	126.38
136	0	0



INVENTOR OATH/DECLARATION AND PETITION

As a below named inventor, I hereby declare: that my residence, post office address, and citizenship are as stated below next to my name; that I verily believe I am the original, first, and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled DEVICE FOR ENHANCING REMOVAL OF LIQUID FROM FABRIC, the specification of which is attached hereto; that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above; and that I acknowledge the duty to disclose information which is material to patentability as defined in § 1.56(a) of Title 37 of the Code of Federal Regulations.

I hereby claim the benefit under Section 120 of Title 35 of the United States Code of the earlier filed patent application filed in the United States Patent Office as application no. 09/356,782 filed on July 19, 1999; and, insofar as the subject matter of each of the claims of these applications is not disclosed in the earlier filed pending applications in the manner provided by the first paragraph of Section 112 of Title 35 of the United States code, I acknowledge the duty to disclose material information, as defined in Section 1.56(a) of Title 37 of the Code of Federal Regulations, which occurred between the filing date of the earlier filed applications and the filing date of this application.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code, and that such

willful, false statements may jeopardize the validity of the application or any patent issuing thereon.

Wherefore, I pray that Letters Patent be granted to me for the invention or discovery described and claimed in the foregoing specification and claims, declaration and this petition.

Signed at LGU, Utah, this 12 day of JUNE, 2000.

INVENTOR:

Dan Haynie

Residence: (City, State): North Logan, Utah
Citizenship: United States of America
Post Office Address: 1058 East 2100 North, North Logan, Utah 84341

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PATENT APPLICATION
ATTORNEY DOCKET NO. T8098.CIP

POWER OF ATTORNEY

As the Assignee of the entire right, title and interest in the subject matter which is claimed and for which a patent is sought on the invention entitled DEVICE FOR ENHANCING REMOVAL OF LIQUID FROM FABRIC, the specification of which is being filed concurrently herewith; we hereby appoint as our attorneys and/or patent agents, VAUGHN W. NORTH, Registration No. 27,930, M. WAYNE WESTERN, Registration No. 22,788, MICHAEL W. STARKWEATHER, Registration No. 34,441, GARRON M. HOBSON, Registration No. 41,073, WEILI CHENG, Registration No. P44,609, DAVID R. MCKINNEY, Registration No. 42,868, STEVE M. PERRY, Registration No. P45,357, GARY P. OAKESON, Registration No. P44,266, CLIFTON W. THOMPSON, Registration No. 36,947, and DAVID W. OSBORNE, Registration No. 44,989, all with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

All correspondence concerning this application should be directed to:

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Sandy, Utah 84091-1219
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Facsimile: (801) 566-0750

Wherefore, we pray that Letters Patent be granted to us for the invention or discovery described and claimed in the foregoing specification and claims and this power of attorney.

Signed at Logan, Utah, this 14th day of July, 2000.

ASSIGNEE:

CONCEPT CLEANING SYSTEMS, INC.

By: Craig Donaldson, President

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